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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,797	07/14/2003	Akio Yamamoto	500.42943X00	4080

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EXAMINER	
CHOW, CHARLES CHIANG	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,797	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Charles Chow	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/14/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:
A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 5, 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Rimini (US 2003/0194,981 A1).

Regarding **claim 1,** Rimini et al. (Rimini) teaches a signal receiving apparatus [Fig. 3, abstract] for converting a received high frequency signal down to a baseband signal for processing [rf to baseband for processing, abstract, 0001],

said apparatus [mobile station receiver 300, Fig. 3] comprising an analog control AGC having a continuously varying gain [the analog continuous AGC 326]; and a step control AGC [digital AGC 344] connected to said analog control AGC [the analog AGC loop 320 is connected to the digital, step, AGC loop 340 via filter 335, Fig. 3, paragraph 0027],

said step control AGC having a gain switched in steps [the multiplier 342 stepping the gain with the digital-gain value from AGC 344, paragraph 0030],

wherein one of said analog control AGC and said step control AGC controls the gain of said baseband signal [the analog AGC loop 320 one of the 320 & 340 controls the analog gain of the baseband at 322, paragraph 0027], and

the other of said analog control AGC and said step control AGC controls the gain of the gain controlled baseband signal [the other, 340, of the 320 & 340 controls the gain of the gain controlled baseband signal from the output of VGA 322, by the gain stepping multiplier

342, paragraph 0030; for the CDMA receiver, paragraph 0001; having the complex baseband signals from down conversion at mixer 310, 0028, 0036].

Regarding **claim 5,** Rimini teaches an incoming signal processing method for converting a received high frequency signal down to a baseband signal for processing [abstract, step 515, Fig. 5 & Fig. 3],

said method comprising one of the following steps of controlling the gain of the baseband signal in accordance with the level of the received signal, and continuously controlling the gain of the gain controlled signal in accordance with the level of the received signal [the step 550 to estimate received signal power, level, Fig. 5 paragraph 0031, then followed by the step of "Continue", to rescale the gain in digital AGC in step 535, to perform the gain stepping with the digital-gain value in multiplier 342, paragraph 0030; to control the gain controlled baseband signal from the analog gain controlled AGC in step 525, in accordance with the estimated received signal power level in step 550], and

continuously controlling the gain of the baseband signal in accordance with the level of the received signal [the estimating & continuing step after step 550], and

controlling the gain of the gain controlled signal in steps in accordance with the level of the received signal [the stepping by multiplier 342 to rescale the filter output in digital AGC loop, step 535].

Regarding **claim 6,** Rimini teaches an incoming signal processing method [Fig. 3, Fig. 5] for converting a received high frequency signal down to a baseband signal for processing [the convert to baseband in step 515 for processing baseband],

said method comprising the step of controlling the gain of the baseband signal using one of an analog control AGC 320 having a continuously varying gain [the continuous analog gain control from amplifier 322], and a step control AGC having a gain switched in steps [

the digital AGC 340 switches the gain in steps of digital-gain value, by multiplier 342, paragraph 30], and

further controlling the gain of the gain controlled signal with the other of said analog control AGC and said step control AGC [the other, 340, of the 320 & 340 controls the gain of the gain controlled baseband signal from the output of VGA 322, by the gain stepping multiplier 342, paragraph 0030; for the CDMA receiver, paragraph 0001; having the complex baseband signals from down conversion at mixer 310, 0028, 0036].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimini in view of Chen (US 6,941,121 B2).

Regarding **claims 2, 7**, Rimini teachs the analog AGC 320 & step control AGC 340. Rimini fails to teach the memory for storing an offset according to gain changeable width for switching the gain step & the controlling timing of gain stepping.

Chen teaches a memory [the lookup table in DAC 142a/142b has stored calibration gain setting, col. 4, line 58 to col. 5, line 10; step 212-220, Fig. 2] for storing an offset signal in accordance with a gain changeable width [stored gain setting in DAC] upon switching the gain [the gain controlled by AGC 130 causing abrupt change in DC offset, col. 4, lines 48-61]; and

a controller for reading said offset signal from said memory to control a signal for controlling the gain of said analog control AGC in accordance with said offset signal [the reading of the time dependent DC offset in step 207 & stores the DAC setting in lookup table of DAC control unit 144a in step 220, col. 5, lines 48-65; the shifting of the gain setting via AGC 130, col. 5, lines53-56], substantially at the same timing as or at a timing earlier than a timing at which the gain of said step control AGC is switched [the elapse settling time 50 microseconds, for the gain setting earlier, in order to allow DC offset to settle in 50 microsecond, col. 8, lines 22-28, col. 57-63], in order to accurately determine the different gain setting for the corresponding DC offset [abstract]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Rimini with gain setting for DC offset with 50 microsecond settling time of the DC offset, in order to accurately determine the different gain setting for the corresponding DC offset.

3. Claim 3 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimini in view of Walker et al. (US 2005/0208,919 A1) and Darabi (US 2003/0181,179 A1).

Regarding **claim 3,** Rimini teaches the an amplifier 305 for amplifying said received high frequency signal, and a frequency converter 310 for converting the high frequency signal from said amplifier down to the baseband signal [paragraph 0028].

Rimini fails to teach the said amplifier having a gain switched in steps, for the high frequency signal. Walker et al. (Walker) teaches these features [the serial bus 152 from SBI 150 to switch the gain in steps of the high frequency amplifier 114. Fig. 1, paragraph 0103], in order to remove the DC offset [abstract]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Rimini with Walker's switching the gain in step of the rf amplifier 114, in order to remove the DC offset.

Rmini & Walker fails to teach the wherein the gain of said step control AGC is switched at a first reception level, and the gain of said amplifier is switched at a second reception level higher than the first reception level. Darabi teaches these features [the gain stepping in programmable amplifiers PGAs 516A/516B by 4-bit counter output, paragraph 0077; having the first reception level below the low reference voltage to step up the gain; the second reception lever higher than the high reference voltage to step down the gain, paragraph 0076], in order to control the gain stepping based on received signal level detected in 1004, to reduce the danger for amplifier saturation, distortion [0012]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Rimin & Walker with Darabi's stepping the gain of PGAs, in order to avoid signal distortion.

4. Claims 4, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimini in view of Walker et al. (US 2005/0208,919 A1)

Regarding **claims 4, 9**, Rimini teaches the an amplifier 305 for amplifying said received high frequency signal, and a frequency converter 310 for converting the high frequency signal from said amplifier down to the baseband signal [paragraph 0028].

Rimini fails to teach the said amplifier having a gain switched in steps, for the high frequency signal. Walker et al. (Walker) teaches these features [the serial bus 152 from SBI 150 to switch the gain in steps of the high frequency amplifier 114. Fig.1, paragraph 0103].

Walker teaches the wherein the gain of said step control AGC is switched at a first reception level when the reception level is increasing, and at a second reception level different from the first reception level when the reception level is decreasing [the detecting RSSI at 412, Fig. 4A; the RSS to control the total gain in Fig. 4B; the total gain stepping in

inversely related to RSS in Fig. 4C, paragraph 0078-0079, table 1, for first reception level is increasing to switch gain from L1 Rise to L1 Fall; second reception level is deceasing to switch the gain from L2 Fall to L2 Rise],

the gain of said amplifier is switched at a third reception level when the reception level is increasing, and at a fourth reception level different from the third reception level when the reception level is decreasing [the gain is switched from L3 Rise to L3 Fall, at a corresponding third reception level RSS when is reception level is increased; the gain is switched from L4 Fall to L4 Rise, at a corresponding fourth reception level RSS when is reception level is decrease, Fig. 4, paragraph 0078-0079, table 1]; and

The first reception level and the second reception level are lower than the third reception level and the fourth reception level, respectively [the first reception and second reception level corresponding to gain switching at L1 & L2 is lower than the third reception and fourth reception level corresponding to gain switching at L3 & L4, Fig. 4], in order to remove the DC offset [abstract]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Rimini with Walker's switching the gain in step of the rf amplifier 114, in order to remove the DC offset.

Regarding **claim 8**, Walker teaches the amplifying the received high frequency signal by an amplifier 114 having a gain switched in steps [0103], wherein the gain of said step control AGC is switched at a first reception level [L1, Fig. 4C]; and the gain of said amplifier is switched at a second reception level [L2] higher than the first reception level.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow C.C.

November 16, 2005.

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